Chapter 3 Concluding Remarks

Changes in Needs Since 2000

Between January 1, 2000, and January 1, 2004, reported POTW needs increased from $186.4 billion to $202.5 billion, a total increase of $16.1 billion or 8.6 percent. The largest portions of this increase are associated with Category I and II wastewater treatment needs ($5.4 billion increase), Category III-A and III-B sewer repair needs ($3.5 billion increase), and Category VI stormwater management program needs ($2.8 billion). Category X recycled water distribution, a new category in the CWNS 2004, added $4.3 billion in needs.

The increases in wastewater treatment needs and in sewer repair needs are due to a variety of factors. The factors include rehabilitation of aging infrastructure, facility improvements to meet more protective water quality standards and, in some cases, providing additional treatment capacity for handling wet-weather flows. Recycled water distribution, a newly added category, recognizes the greater need for water conservation, recycling and reuse in many States.

The increase in stormwater management program needs is mainly due to increased implementation of the NPDES Stormwater Program and the related greater availability of stormwater management planning documents.

With each survey, a more comprehensive picture of the Nation's needs is developed. Nevertheless, the level of effort that States put forth in reporting their CWNS 2004 data varied considerably. The availability of resources (e.g., staff, time, information) in each State affected the data quality. The data quality, in turn, affected the completeness of the total needs reported nationally in the CWNS 2004.

Trends in the Nation's Ability to Provide Wastewater Treatment

Given the increasing needs presented in this Report and the even larger needs estimated in other reports, one might ask how well the Nation is providing secondary and advanced wastewater treatment. Influenced by CWA goals and associated funding mechanisms, significant progress has been made to improve wastewater treatment across the Nation.

Figure 3-1 shows that although the number of people served by facilities with secondary treatment increased only moderately between 1972 and 2004 (an increase of 10.9 million people), the number of people provided with advanced wastewater treatment increased dramatically (from 7.8 million people in 1972 to 108.5 million people in 2004). Moreover, the population served by less-than-secondary treatment decreased from more than 50 million in 1972 to 3.3 million in 2004.

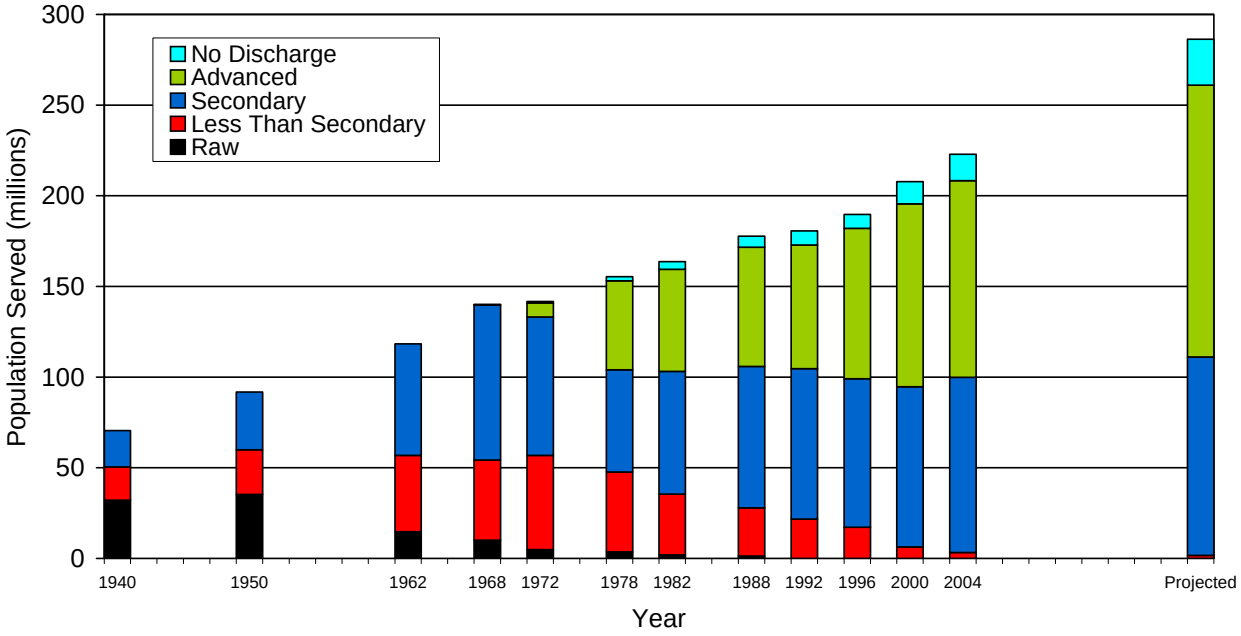

Figure 3-1. Population served by POTWs nationwide for select years between 1940 and 2004 and projected (if all needs are met), organized by wastewater treatment type.
Source: U.S. Public Health Service and USEPA Clean Watersheds Needs Surveys

Table 3-1 presents the current status of the level of treatment based on data presented in this Report and past surveys.[16] In comparison to 2000, an additional 15.0 million people now receive centralized collection and wastewater treatment. Municipal wastewater treatment plants that provide secondary or better levels of treatment serve 219.6 million, or 73.8 percent of the U.S. population. The population served by less-than-secondary treatment has been reduced from 6.4 million people to 3.3 million people. There are now 2,188 non-discharging facilities that serve 14.6 million people, or 4.9 percent of the U.S. population. More details about the change in plant influent and effluent loadings to surface waters are provided in EPA's report *Progress in Water Quality, An Evaluation of the National Investment in Municipal Wastewater Treatment.* See Appendix H of this Report.

Figure 3-1 and Table 3-1 show the projected improvements in wastewater treatment infrastructure if the secondary and advanced wastewater treatment needs (Categories I and II) specified in this Report are met. The number of non-discharging facilities and facilities that provide secondary or more advanced treatment is projected to increase by 7.8 percent from 16,325 to 17,598. The population being served by these facilities is projected to increase by 29.6 percent.

On the basis of the needs presented, it is projected that a total of 17,851 operational facilities will serve a future population of 286.2 million people, or 81.6 percent of the U.S. population. EPA expects that the projected increase in centralized treatment facilities will not be as large as suggested by the data because more planning authorities are recognizing that properly designed, constructed and operated onsite wastewater treatment systems should be considered a permanent part of the wastewater infrastructure rather than just an interim solution.

[16] Other related technical data discussed in this section are provided in Appendix C, Table C-3.

Table 3-1. Improvements in Treatment Level of the Nation's Municipal Wastewater Treatment Facilities

Level of Treatment	Population Served in Millions (Number of Facilities)				Population Change	Projected Population Change 2004–2024
	1996	2000[a]	2004[a]	2024	2000–2004	
Less than secondary[b]	17.2 (176)	6.4 (47)	3.3 (40)	1.7 (26)	-48.4%	-48.5%
Secondary	81.9 (9,388)	88.2 (9,156)	96.5 (9,221)	109.4 (9,446)	9.4%	13.4%
Greater than secondary	82.9 (4,428)	100.9 (4,892)	108.5 (4,916)	149.9 (5,607)	7.5%	38.2%
No discharge[c]	7.7 (2,032)	12.3 (1,938)	14.6 (2,188)	25.3 (2,545)	18.7%	73.3%
Partial treatment[d]	--	-- (222)	-- (218)	-- (227)	--	--
Total	189.7 (16,024)	207.8 (16,255)	222.8 (16,583)	286.2 (17,851)	7.2%	285%

[a] Where necessary, this table contains best available information from States and Territories that did not have the resources to complete the updating of the data or did not participate in the CWNS 2000 or 2004. In such circumstances, information for this table was taken from previous surveys.
[b] Includes facilities granted section 301(h) waivers from secondary treatment for discharges to marine waters. As of January 1, 2004, waivers for 34 facilities in the CWNS 2004 database had been granted or were pending.
[c] *No discharge* refers to facilities that do not discharge effluent to surface waters (e.g., ground water recharge).
[d] The number of facilities includes facilities that provide partial treatment and that direct partially treated wastewater to another facility for further treatment. The population associated with these facilities is omitted from this table to avoid double counting.

The number of facilities that provide less-than-secondary treatment is projected to decline from 40 facilities serving 3.3 million people to 20 facilities serving 1.7 million people, nearly all of whom will be served by facilities with CWA section 301(h) waivers. Section 301(h) of the CWA provides an opportunity for a facility that discharges to marine waters to obtain a waiver from the act's secondary treatment requirements provided the facility can show compliance with a number of stringent criteria intended to ensure that the less-than-secondary discharge will not adversely affect the marine environment.

With much of the country being served or projected to be served by secondary wastewater treatment or better, continued improvements in infrastructure might be better measured not by population served and improved levels of treatment but by measures of sustainable infrastructure (e.g., condition of infrastructure, sustainability of infrastructure funding strategy). This is a reasonable progression because a significant portion of the Nation's infrastructure has reached, or soon will reach, the end of its projected useful life.

Funding of Needs

Although local ratepayers ultimately fund most wastewater treatment needs, other funding is available. The CWSRF is one of many supplementary Federal, State and local funding sources. A wide variety of Federal sources are described in EPA's *Catalogue of Federal Funding Sources for Watershed Protection* (http://cfpub.epa.gov/fedfund/).

From July 1, 2000, through June 30, 2004, EPA provided an annual average of $1.3 billion in grants to State CWSRF programs to assist with point and NPS pollution control needs. In the same period, States combined these CWSRF funds with State matching funds, bond proceeds and loan repayments to provide assistance to local communities, mostly in the form of loans. The assistance amounted to approximately $4.4 billion per year.

Sustainable Infrastructure Initiative

Following the release of EPA's 2002 *Clean Water and Drinking Water Infrastructure Gap Analysis* a national meeting was held, titled *Closing the Gap: Innovative Responses for Sustainable Water Infrastructure*, in which participants recognized that current spending and operational practices would need to change to avoid the emergence of a funding gap that would hamper efforts to provide future clean water. The participants further recognized that Federal funding is and will remain limited and that initiatives to adequately address the potential emerging gap will need to focus on improved management and innovative approaches for reducing the cost of infrastructure.

The concept of *sustainable infrastructure*, announced at the January 2003 meeting, consists of *four pillars*:

Full Cost Pricing of Water. There are strong economic arguments for shifting more of the cost of water from taxes to rates, and they are closely linked with efficient water use. Utilities that implement pricing structures that recover the full cost of providing service are promoting economically efficient and environmentally sound water use decisions by customers. The Congressional Budget Office's *Future Investment in Drinking Water and Wastewater Infrastructure* report (November 2002) estimated that future infrastructure investment needs could be paid by ratepayers and that this investment would increase water bills from 0.5 percent of income to 0.9 percent of income, on average. If these rate increases create problems for low-income or fixed-income households, a wide variety of mechanisms are available to mitigate the impacts, such as rate reductions or local subsidies to these households in the form of *life-line* water rates.

Better Management. Proven management methods are available to reduce the cost of providing clean water and improving performance. One of these is **asset management**. This is a data-driven approach to prioritizing investments in infrastructure so that they meet customer expectations. Armed with detailed information on the age, condition and performance of infrastructure, systems would be able to repair or replace infrastructure as needed to meet performance standards. This would optimize investment. Savings from asset management approaches are often in the range of 10 percent of the capital investment. Ten percent of the estimated infrastructure needs in this assessment ($202.5 billion) would be $20.3 billion over 20 years, or $1.0 billion per year. A related method is **environmental management systems** (EMS). This involves comprehensive assessment of the utility's operations for continual improvement, resulting in better performance and lower cost.

Efficient Water Use. Much of the needed investment reported in this Report consists of installing or rehabilitating new collection pipes and treatment plants to meet the needs of the existing U.S. population. These projects are sized to accommodate reasonably anticipated growth. Decreasing water use, however, might reduce the projected increase in design capacity, thereby reducing investment needs. EPA estimates that there could be a 20 percent reduction in water use if simple conservation methods were introduced. This might translate to smaller capacity plants, which in turn would have reduced capital and operating costs.

Watershed Approach. There is great potential for cost savings in what EPA has broadly described as the *watershed approach* to management. This term refers to policies that include broad stakeholder involvement, hydrologically defined geographic boundaries and coordinated management across all policies that affect water. Specific practices may include incentives for pollutant reduction, purchasing easements to minimize or eliminate pollutant sources and converting land uses where such approaches are cost effective.

No single initiative will answer the question of how to pay for the infrastructure needs identified in this assessment. Yet, each has great potential, and none has been fully exploited. Taken together, and used in a

coordinated fashion with the significant levels of financial assistance available at the Federal and State levels, they provide an outline of how to pay for these infrastructure needs.

Relationship of CWNS to the Sustainable Infrastructure Initiative

The CWNS supports the Sustainable Infrastructure Initiative by encouraging the documentation of long-term needs and by providing needs and technical information for each facility. Significant advances have been made in improving the needs geographic data. The improvements enable the use of needs data with water quality standards, NPDES permits, impaired waters and other environmental program data in Internet mapping tools, as well as in off-line analyses. Using CWNS 2004 data in these tools and analyses supports technology and project selection, NPDES permitting, TMDL analyses and other watershed-based projects that support efficient meeting of water quality and public health objectives.

This trend will likely increase in future surveys by integrating needs data with emerging efforts like the CWSRF environmental benefits measurement effort, which seeks to estimate project-specific water quality benefits. Needs data will also be integrated into Internet-based water quality models and other decision support tools that support State and local environmental management. As implementation of the Sustainable Management Initiative activities accelerates over the next few years, the CWNS will likely evolve to further support those efforts.

Other Potential Influences on Future Surveys

Future CWNS data collection will be enhanced by further capitalizing on new Internet data collection and electronic document management technologies, as well as by continuing to integrate CWNS data with other data related to facilities. These efforts are aimed at reducing data collection costs while increasing the quality of the data.

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